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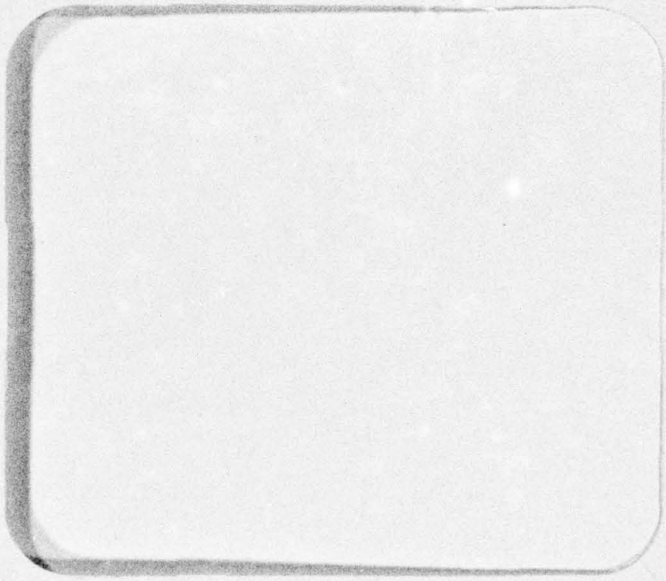

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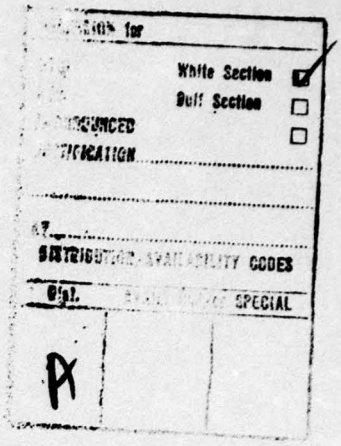

THE EFFECTS OF VERTICAL AND HORIZONTAL POWER ON INDIVIDUAL MOTIVATION AND SATISFACTION

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Seattle, Washington

Technical Report 76-2

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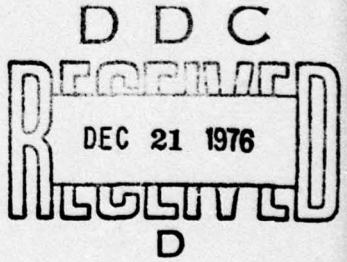

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20. ABSTRACT *(Continue on reverse side if necessary and identify by block number)*

This research examined the effects of both vertical and horizontal power on participants in an experimental decision task. Both power variables had a substantial positive impact on individual motivation and satisfaction. These results strongly suggest that both power dimensions are important for understanding peoples' reactions to participation in the decision process.

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The Effects of Vertical and Horizontal Power on Individual Motivation and Satisfaction

Over the last twenty-five years the studies on participation in decision making have increased in number and broadened in scope. The early research suggested that participation in the decision process could increase productivity (Coch & French, 1948; Vroom, 1960). More recent research has emphasized such topics as participation in setting performance goals (Latham & Yukl, 1975), in appraisal of one's performance (Wexley et al., 1972), in organizational change (Beer, 1976) and the ongoing managerial decision process (Vroom & Yetton, 1973). Reviews of this literature (Lowin, 1968; Vroom, 1964, 1970; Wood, 1974) all reach similar conclusions: Participation can have an important impact on both employee motivation and satisfaction.

Two central facts clearly emerge from this literature. First, participation is essentially a process of power redistribution (Scott et al., in press). The definition of participation is that meaningful input in the decision process is made by people who were previously omitted from these deliberations. This increased share of the action supposedly results in greater motivation and commitment to the decision outcomes (Mitchell, 1973). Thus, the tradeoff made by management if obvious. By relinquishing power, there is a potential gain in productivity and satisfaction.

The second fact about the participation literature is that it has been narrow in its focus. Almost without exception the participation research has emphasized vertical linkages. Participation is almost always defined as the degree to which subordinates have power relative to the power of their supervisor.

This preoccupation with vertical power only gives us part of the picture. In most organizational settings information from one unit or subgroup may be

combined with the recommendations from another subgroup or unit before a final decision is made. These linkages are essentially horizontal in nature. They are concerned with how power is distributed across groups.

A good example of these different types of linkages occurs in academic situations all the time. Individual faculty members are concerned not only with their influence in departmental policy but also with the power of their department relative to other departments. Both factors are important in determining the degree to which decisions about policy and the distribution of scarce resources reflect the interests of the individual professor.

Some writers have commented on this omission in the literature (Landsberger, 1961; Salancik & Pfeffer, 1974). But the empirical research is still rather slight. Some work has been done on how groups protect their power domains from other groups (e.g., Dalton, 1959; Strauss, 1964) and on how coalitions form among groups to gain and maintain power (Cyert & March, 1963; Thompson, 1967). Also, the research by Hinings and his colleagues (Hinings et al., 1974) discusses participation and influence across organizational subunits.

However, to date, there have been no studies which attempt to assess the effects of different amounts of vertical and horizontal power on the decision process. The purpose of the following research was to investigate this problem in more detail. Vertical and horizontal power were manipulated and the effects of the manipulations on individual motivation and satisfaction were assessed. It was our hypothesis that increases in both vertical and horizontal power would result in increased motivation and satisfaction.

METHOD

The experiment was run as a simulation of an actual work setting. Marketing students were asked to rate some sporting goods products in terms of their market potential. Each group was composed of three people, a leader and two followers who sat at the same table. Although the ratings were done individually, the three judgments were weighted according to one of three power distributions and combined to form a group judgment. The leader always had more power than his members. This group judgment was then weighted according to one of four power distributions and combined with the judgment generated by a group of engineering students (fictitious) to give an overall team decision. Thus, there were six different levels (three for the leaders and three for the members) of within group influence (vertical power distribution) and four levels of between group influence (horizontal power distribution). Each individual was run in only one of the twenty-four cells. The independent variables were the different amounts of vertical and horizontal power and the dependent variables were the reactions to these different power distributions.

Recruitment of Subjects

Undergraduate students were recruited from all sections of an introductory marketing course and several intermediate courses. In the week prior to the study, each professor introduced the researcher as a graduate student who was helping on a marketing project. The researcher took approximately ten minutes to describe the study and have the students sign up for the following week.

Students were informed that the study was being conducted by a number of the marketing and engineering faculty in conjunction with GMA research (an actual marketing research firm that permitted the use of their name in this research). The study was described as being designed to explore the feasibility of using student input to improve new product evaluations. Students were told that this involved evaluating a number of sportings goods products currently being considered by Northwest firms who were clients of GMA. They were encouraged to participate because this study might allow them to practice making actual marketing decisions of a complex nature. Financial incentives were also offered. The five best teams (as judged by marketing faculty) would receive fifty dollars. A letter describing the project (with GMA letterhead) and scheduling details were handed out in class.

A total of 151 students completed the study. Facilities were arranged so that up to six groups could participate at one time, with each group consisting of a leader and two members. Students from the introductory course were assigned the role of "members" and students from the intermediate courses were "leaders." Overall, there were 45 leaders and 106 members. Two confederates were available at each session to fill in for subjects who were absent, thus the number of leaders and members are not exactly proportional.

Assignment of Subjects to Experimental Conditions

Given the need for a large number of subjects out of a limited population of marketing students, it was not feasible to completely assign subjects to conditions on a random basis. However, all of the subjects that signed up for a given time period were randomly assigned to their subgroup. This procedure avoided the possibility of friends choosing to work together. All sessions were scheduled during a one week period to minimize the chance of

students talking about the study either in or out of class. Also, at the end of each session, subjects were strongly encouraged to delay discussing the study until the following week, by which time all groups would have participated.

Experimental Sessions

As subjects arrived at the conference room where the study was being conducted, they were told at which of six tables to sit and whether they were leaders or members. The experimenter had seating charts for each team and checked names off as subjects arrived. If some subjects did not arrive, reassignments were made to form complete three-person groups and confederates were inserted at the last minute to fill in any missing places. Once all assignments were completed, one updated seating chart was placed in front of the subjects at each table. We will discuss this chart later in more detail.

The researcher first read the detailed instructions about the task and the composition of the teams. They were told that the new product ideas were to be evaluated by six-person teams composed of two three-person subgroups. One subgroup, composed of engineering students, was to evaluate the products on a production-cost basis. The other subgroup, composed of the marketing students, was to evaluate the market potential of the products. The subjects were told that due to time and room constraints it was not possible to schedule the engineering and marketing student evaluations at the same place, but that the two subgroup ratings would be combined later in the day to form an overall team rating of the products. Thus, the experimental sessions included only marketing subgroups. In fact, no engineering students took part in the study; they existed only on paper.

The decision making task was then explained in terms of three examples of new product ideas. The rating sheet for one of these products is shown in Figure 1. Six criteria were specified for evaluating each product idea. Adjacent to each criterion was a brief statement providing initial information about the product. Both the criteria and product information were selected from a larger framework for evaluating products developed by O'Meara (1961). The subjects were asked to rate the products on each of these criteria by indicating a rating of 1 to 10 points, representing their judgment of the market or profit potential of the products. Up to 20 additional points could be assigned to adjust the ratings on the basis of the overall information provided. After these instructions were given, and two example ratings were reviewed, the subjects were to rate the third example product shown in Figure 1.

Insert Figure 1 about here

After the ratings were completed the group leader calculated the marketing subgroup's rating by weighting the three individual ratings. Up to this point the leader and the two subgroup members had completed their ratings on an individual basis. Using the subgroup summary rating sheet (Figire 2) the individual ratings for the example product were multiplied by the "individual influence weights." The leader then added these weighted ratings to obtain the subgroup's rating of the product. Both the members and leaders received this sheet during the instruction period.

Insert Figure 2 about here

CLIENT: Sporting Goods Manufacturer -example-

PRODUCT: Bicycling Rain Gear

PRODUCT RATING SHEET 3

CRITERIA	INITIAL INFORMATION	MARKET POTENTIAL HIGH										LOW
1. RELATION TO PRESENT DISTRIBUTION CHANNELS	Can reach major markets by distributing mostly through present channels, partly through new channels.	10	9	8	7	6	5	4	3	2	1	0
2. BREADTH OF MARKET	A national market and a wide variety of consumers.	10	9	8	7	6	5	4	3	2	1	0
3. PLACE IN MARKET	Product that will have minor improvements over products presently on the market.	10	9	8	7	6	5	4	3	2	1	0
4. QUALITY/PRICE RELATIONSHIP	Approximately the same price as competing products of similar quality.	10	9	8	7	6	5	4	3	2	1	0
5. RESISTENCE TO SEASONAL FLUCTUATIONS	Seasonal fluctuations but inventory and personnel problems can be absorbed.	10	9	8	7	6	5	4	3	2	1	0
6. EXCLUSIVENESS OF DESIGN	Cannot be patented, but has certain salient characteristics that cannot be copied very well.	10	9	8	7	6	5	4	3	2	1	0
7. ADJUSTMENT POINTS	OVERALL EXTENT TO WHICH THE ABOVE INFORMATION INDICATES A FAVORABLE MARKET POTENTIAL FOR THE PRODUCT	20	18	16	14	12	10	8	6	4	2	0

TOTAL POINTS = _____

FIGURE 1

Example Product Set

STUDENT EVALUATION PROJECT

TEAM NUMBER ____
ENGINEERING SUBGROUP
(MARKETING SUBGROUP)

PRODUCT SET MANUFACTURER
-EXAMPLE-

SUBGROUP SUMMARY RATING SHEET

INSTRUCTIONS FOR SUBGROUP LEADER: CALCULATION OF SUBGROUP SUMMARY RATINGS FOR EACH PRODUCT

1. First, COMPLETE your own rating of the product set for this manufacturer.
2. In the box for Rating Points below, ENTER the points which you and your two subgroup members assigned to each product.
3. MULTIPLY these points by each person's Influence Weight and ENTER the Weighted Rating in the next box.
4. ADD the Weighted Ratings to obtain the Subgroup's Rating. ENTER this sum in the final box.

PRODUCT 1		INFLUENCE WEIGHT		RATING POINTS		WEIGHTED RATING		SUBGROUP RATING
SLEEPING BAG MOSQUITO COVER	SUBGROUP LEADER	.80	X	33	=	26.4		
	MEMBER TWO	.10	X	30*	=	3.0	SUM =	33.6
	MEMBER THREE	.10	X	42	=	4.2		

PRODUCT 2		INFLUENCE WEIGHT		RATING POINTS		WEIGHTED RATING		SUBGROUP RATING
SHELTER FOR FISHERMEN	SUBGROUP LEADER	.80	X	52	=	41.6		
	MEMBER TWO	.10	X	58	=	5.8	SUM =	52.8
	MEMBER THREE	.10	X	54*	=	5.4		

PRODUCT 3		INFLUENCE WEIGHT		RATING POINTS		WEIGHTED RATING		SUBGROUP RATING
BICYCLE RAIN GEAR	SUBGROUP LEADER	.80	X		=			
	MEMBER TWO	.10	X		=		SUM =	
	MEMBER THREE	.10	X		=			

SIGNATURE _____

FIGURE 2
Subgroup Summary Rating Sheet

The first independent variable, corresponding to the vertical power distribution, resulted from these individual weights being varied. Subjects were told that these weights represented their individual contributions to the marketing subgroup, this contribution being based on their training or expertise rather than their ability to persuade others. Since the leader had more training (in an upper level course) than the other two members (who were in the introductory course) the leader was always given more influence than the two members who were assigned equal weights. Subjects were assigned to one of three vertical or within-group power distributions:

Distribution 1:	Leader	= .40
	Member one	= .30
	Member two	= .30
Distribution 2:	Leader	= .60
	Member one	= .20
	Member two	= .20
Distribution 3:	Leader	= .80
	Member one	= .10
	Member two	= .10

Note that these three distributions generate six different vertical weights. For the leaders they are .80, .60, and .40. For the members they are .30, .20, and .10. Thus vertical power could range from .10 to .80.

After the leaders had calculated their subgroup's rating of the example product, all subjects were to turn to the Team Summary Rating Sheet (Figure 3) which they were told would be used by GMA to calculate the final team ratings of the product. A similar weighting procedure was to be used to combine the two subgroup ratings, however a different explanation was given to justify

the difference in the power distribution between marketing and engineering subgroups. The differences in these weights were explained on the basis of product characteristics:

> Each of the client firms was asked to indicate the relative amount of influence they gave to marketing and engineering information in the initial evaluation of new product ideas. In general, these firms believed, on the basis of the materials and processes involved, that the engineering groups should be given more/less influence.

Whether reference was made to "more" or to "less" influence for the engineering subgroup depended on the particular horizontal power distribution being implemented in that session.

Horizontal power, the second independent variable, resulted from this manipulation of the subgroup power distribution. Each marketing subgroup was assigned to one of four conditions of horizontal or between-group power:

Distribution 1:	Marketing subgroup	= .80
	Engineering subgroup	= .20
Distribution 2:	Marketing subgroup	= .60
	Engineering subgroup	= .40
Distribution 3:	Marketing subgroup	= .40
	Engineering subgroup	= .60
Distribution 4:	Marketing subgroup	= .20
	Engineering subgroup	= .80

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Insert Figure 3 about here
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STUDENT EVALUATION PROJECT | TEAM NUMBER ____ | PRODUCT SET MANUFACTURER -EXAMPLE- | TEAM SUMMARY RATING SHEET

PROCEDURE TO BE USED BY GMA STAFF: CALCULATION OF TEAM SUMMARY RATINGS FOR EACH PRODUCT

1. ENTER the Subgroup Rating points from the Engineering and Marketing Subgroup Summary Rating Sheets.
2. MULTIPLY these points by each Subgroup's Influence Weight and ENTER the Weighted Ratings in the next box.
3. ADD the Weighted Ratings to obtain the final Team Rating for each product. ENTER this in the final box.

PRODUCT 1	SUBGROUP	INFLUENCE WEIGHT		RATING POINTS		WEIGHTED RATING	TEAM RATING
SLEEPING BAG	ENGINEERING	.20	X	48.9	=	9.78	SUM = 36.66
MOSQUITO COVER	MARKETING	.80	X	33.6	=	26.88	

PRODUCT 2	SUBGROUP	INFLUENCE WEIGHT		RATING POINTS		WEIGHTED RATING	TEAM RATING
SHELTER FOR FISHERMEN	ENGINEERING	.20	X	37.6	=	7.52	SUM = 49.76
	MARKETING	.80	X	52.8	=	42.24	

PRODUCT 3	SUBGROUP	INFLUENCE WEIGHT		RATING POINTS		WEIGHTED RATING	TEAM RATING
BICYCLE RAIN GEAR	ENGINEERING	.20	X		=		SUM =
	MARKETING	.80	X		=		

FIGURE 3
Team Summary Rating Sheet

After the use of the Team Summary Sheet was explained, the subjects were instructed to look back at their team seating chart (Figure 4) to see how their contribution to the team's decision was determined. This chart was used to again clearly represent to the subject his or her vertical and horizontal power. They were told that approximately 60 teams were being formed to rate the products and that the five best teams would each receive fifty dollars. The quality of the team ratings were to be judged by comparing them to criterion ratings established by the marketing and engineering faculty and the GMA staff.

Insert Figure 4 about here

Since there were supposedly six members on each team, the amount that a given individual could earn, if on a winning team, was determined by multiplying the fifty dollars by the product of his individual and subgroup weights. In other words, the amount of money that could be earned was directly proportional to the subject's overall power. Monetary incentives were used to encourage students to participate in the study, to highlight the importance of making quality decisions, and to reinforce the significance of the different power distributions.

After being given an opportunity to ask questions about the rating of the example set, the groups began the actual experiment. Nine new products were used. Talking was discouraged so that the impact of each subject on the group's decision would in fact be determined by their individual weights rather than their persuasive ability in the group.

TEAM NUMBER _____

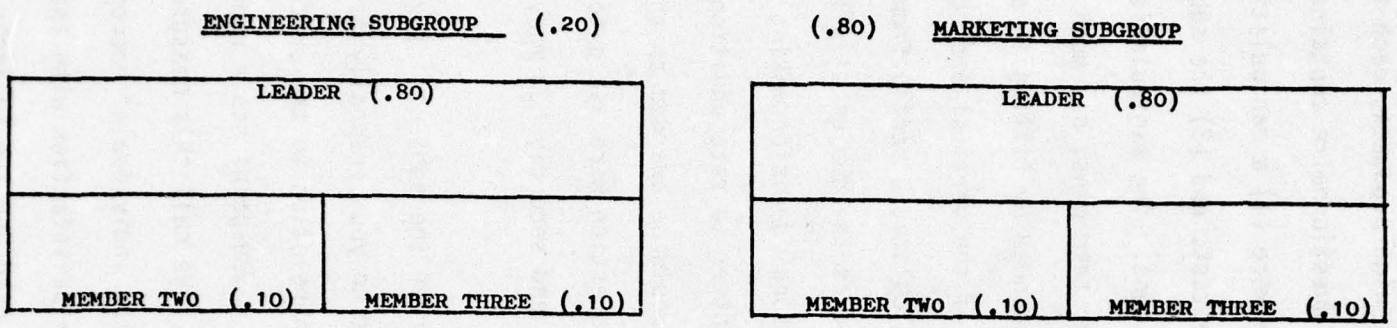
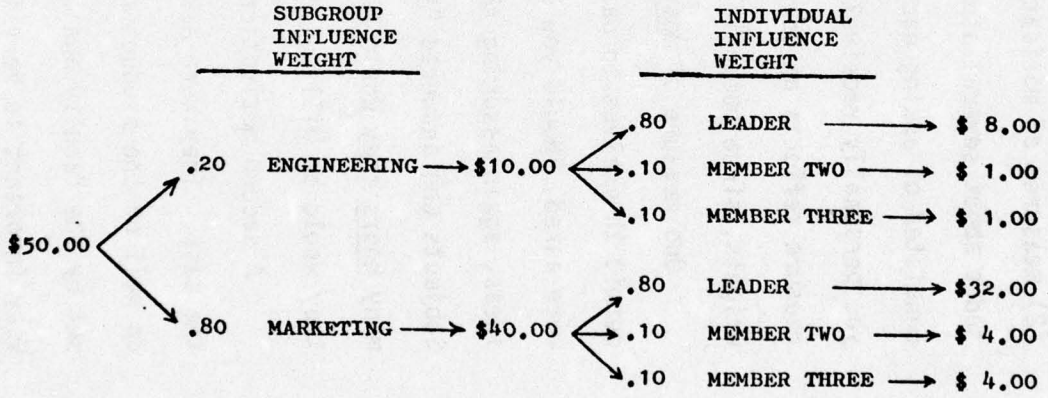


FIGURE 4
Team Seating Chart

CALCULATION OF CONTRIBUTION TO TEAM PRODUCT RATINGS
BY MEMBERS OF THE ENGINEERING AND MARKETING SUBGROUPS



Measures of Dependent Variables

After the groups finished rating the nine products, each subject was given a questionnaire to complete. This questionnaire contained all the measures of the dependent variables which were (1) a manipulation check, (2) measures of motivation to work on the task, and (3) the subject's attitudes about several aspects of the experiment. The manipulation check consisted of asking each subject, "If your team wins, how much money will you personally receive?" The subject responded by filling in a blank. This measure reflects an objective assessment of the vertical and horizontal weights, since potential earnings were calculated directly from these weights.

One measure of motivation was defined as the subjects' willingness to commit themselves to participate in additional decision making tasks. They were asked, "Would you be willing to volunteer to rate additional product ideas, again assuming that dollar prizes would be awarded to the best teams?" Subjects who answered "yes" to the first question were asked to indicate how many hours they would be willing to spend and secondly how many product sets they would be willing to rate.

A second motivational question concerned the subjects' involvement in the task. They were asked, "How important to you personally was it that you do well on the product rating decisions in relation to the criterion standards set by the faculty and the GMA staff?" A seven-point scale ranging from Not Very Important to Very Important was used. We call this measure Ego-Involvement.

The attitudinal variables concerned the individuals' perception of their influence on the team's decision and their satisfaction with this amount of influence. Seven-point scales were again used and the subjects responsed to the following six questions:

1. How much influence do you feel you personally had within your marketing subgroup?
2. How much influence do you feel your marketing subgroup has in the combined marketing-engineering team?
3. Overall, how much influence do you feel you personally have on your combined marketing-engineering team's final product rating?
4. How satisfied are you with your personal influence within your marketing subgroup?
5. How satisfied are you with your marketing subgroup's influence within your combined marketing-engineering team?
6. How satisfied are you with your overall influence in your combined marketing-engineering team?

Summary of Overall Design

The three within-group distributions and four between-group distributions of power produce a 6 x 4 design with each subject reacting to one of twenty-four joint combinations of vertical and horizontal power. These joint combinations are labeled as conditions 1 through 24 in Figure 5. The values within the cells represent the joint weight for each participant and the number of subjects in each cell.

Insert Figure 5 about here

These particular weights were chosen so that there would be several combinations where the product of the two weights would yield equal joint weights. For example, the joint weight of leaders in condition 2 and condition 5 are equivalent. Likewise, equal joint weights for leaders are found

FIGURE 5

Joint Power Weights and Number of Subjects in each Experimental Condition

HORIZONTAL POWER

(Marketing Subgroup Influence Weights)

VERTICAL POWER (Individual Influence Weights)	.80	.60	.40	.20
.80	(1) .64 JW 4 L	(2) .48 JW 4 L	(3) .32 JW 5 L	(4) .16 JW 5 L
.60	(5) .48 JW 3 L	(6) .36 JW 4 L	(7) .24 JW 2 L	(8) .12 JW 3 L
.40	(9) .32 JW 6 L	(10) .24 JW 3 L	(11) .16 JW 3 L	(12) .08 JW 3 L
.30	(13) .24 JW 8 M	(14) .18 JW 7 M	(15) .12 JW 8 M	(16) .06 JW 9 M
.20	(17) .16 JW 9 M	(18) .12 JW 8 M	(19) .08 JW 9 M	(20) .04 JW 8 M
.10	(21) .08 JW 10 M	(22) .06 JW 10 M	(23) .04 JW 12 M	(24) .02 JW 8 M

NOTE: JW represents the joint power weight, L represents the number of leaders, and M represents the number of members.

in conditions 3 and 9, conditions 7 and 10 and conditions 4 and 11. For members, equivalent joint power weights are located in four other pairs of conditions.

The design allows us to test the following questions:

1. What are the separate effects of vertical and horizontal power on motivation and attitudes?
2. What is the combined effect (i.e., the joint power weight) on motivation and attitudes?
3. Given equal joint power weights, but unequal vertical and horizontal weights, which power dimension is more important for motivation and attitudes?

RESULTS

Following a discussion of the manipulation check, our second section will turn to the main effects of differences in vertical and horizontal power. The third section will discuss the effects of differences in joint power weights and the last section reviews the data when the joint power weights are equivalent.

Manipulation Check

Responses to the question provided on the questionnaire as a manipulation check indicated that the experimental manipulations were successful. The question asked how much money subjects expected to receive if their team won. As can be seen in Table 1, the effects of the vertical and horizontal power distributions on expected earnings were significant. For both tests the F values were significant at $p < .001$. The interaction terms were also

significant, as would be expected since potential earnings were calculated directly from the product of the two power weights.

Insert Table 1 about here

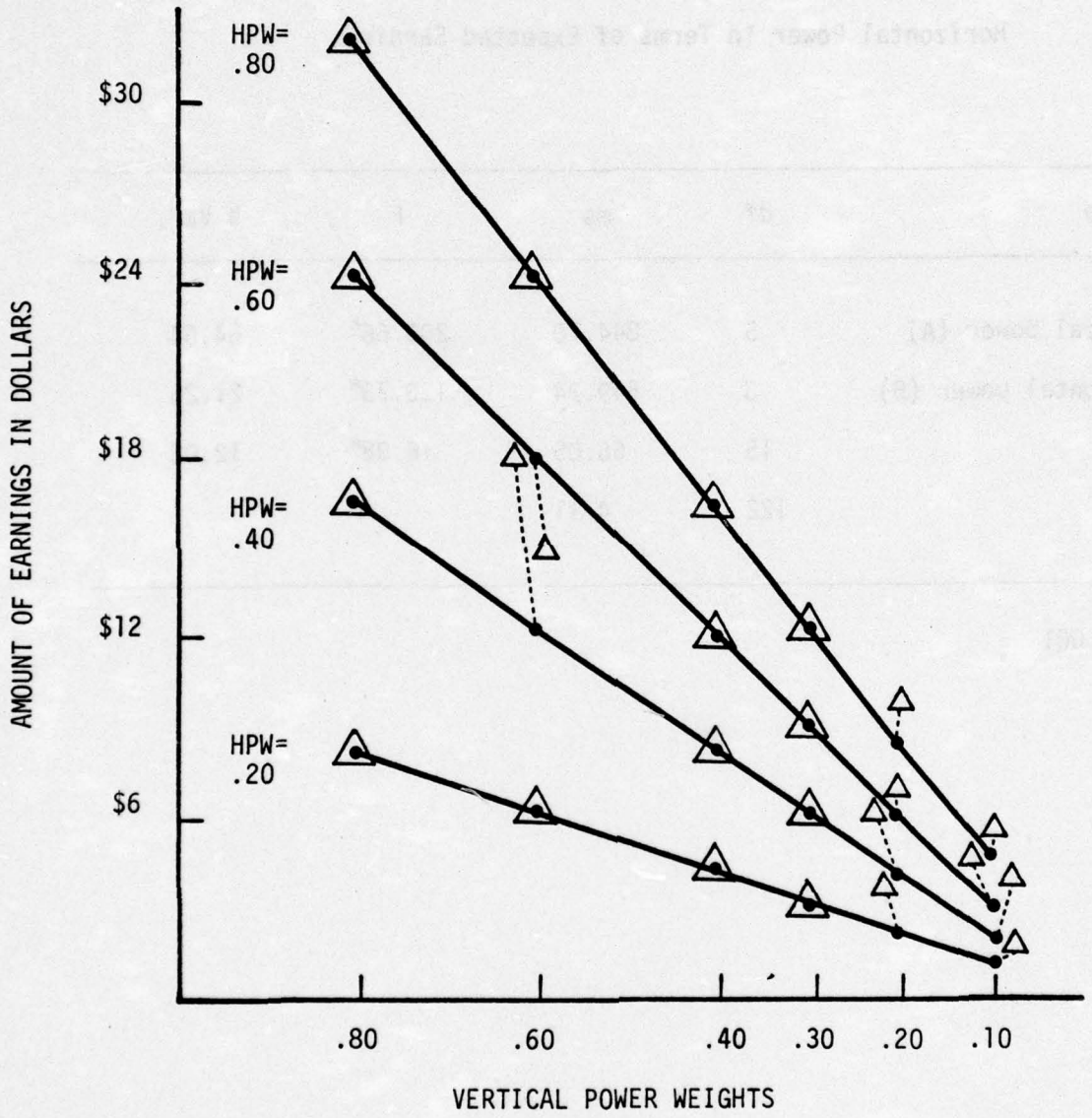
The close correspondence between subjects' reports of expected earnings and the actual amounts that could be won (as a result of the manipulation of the power weights) is shown in Figure 6. The actual amounts that could be won are shown by points along the solid line. The means for expected earnings in each condition are indicated by small triangles. Triangles located on the solid lines indicate that expected earnings were identical to the actual potential earnings. For members, the few cases where expected earnings varied somewhat from the actual potential earnings occurred mainly where the actual earnings were fairly low. For leaders, only 3 of the 44 subjects reported expected earnings which deviated from actual conditions. It appears as if the manipulation was successful.

Insert Figure 6 about here

One further point should be mentioned before we turn to the rest of the results. Given the design of the experiment there were two ways in which the data could have been analyzed. One strategy would be to do all the analyses separately for leaders and members. This process would involve two 3 x 4 designs with the levels of horizontal power being the same but with different levels of vertical power (.80, .60, and .40 for leaders and .30, .20, and .10 for members). A second strategy is the one described above where all six levels of vertical power are used to produce a 6 x 4 design.

FIGURE 6

Comparison of Actual Earnings and Perceived Earnings as a Manipulation Check



NOTE: Actual potential earnings are shown as points along the solid line and perceived earnings are shown with triangles. The solid lines connect the means for earnings given the Horizontal Power Weights (HPW) of .80, .60, .40, and .20. Dotted lines link actual and perceived earnings in conditions where they diverge.

TABLE 1

Two-way Analysis of Variance of the Effectiveness of the Manipulations of Vertical and Horizontal Power in Terms of Expected Earnings

Source	df	ms	F	% Var.
Vertical power (A)	5	844.70	205.66*	54.64
Horizontal power (B)	3	549.24	133.73*	21.26
A x B	15	66.05	16.08*	12.08
Error	122	4.11		

*$p < .001$

We analyzed the data both ways and have chosen to report the data from the 6 x 4 design for three reasons. First, it is simpler to discuss the results. The 6 x 4 design produces half the amount of data that would need to be reported for two 3 x 4 designs. Second, there were no substantive differences in the findings. In almost every case where an effect is significant in the 6 x 4 design it is also significant in the corresponding 3 x 4 designs. Third, and finally, from a theoretical point of view, vertical power in fact refers to the way in which the total amount of power is distributed within the group. Thus, from our perspective the 6 x 4 design makes more sense.

Effects of Increases in Vertical and Horizontal Power

Motivation--Motivation, the first dependent variable, was measured with two questions concerning the subjects' willingness to commit themselves to participate in additional decision making tasks and a question on the perceived importance of doing well on the task (Ego-Involvement). In the two primary measures, subjects indicated how many additional product sets they would be willing to rate and how much additional time they would be willing to spend. These measures reflect a behavioral commitment to the task. Responses to these two measures were highly correlated, $r = .79$.

Partial support was obtained for the hypotheses that subjects would be more committed to participating as their vertical and horizontal power increased (see Table 2). Both power dimensions were unrelated to the product set commitment measure. However, vertical power was marginally related to commitment in terms of additional time, $F(5,127) = 2.08$, $p < .07$ as was horizontal power, $F(3,127) = 2.51$, $p < .06$. As vertical power increased

from .10 up to .80, time commitment increased from approximately 1.50 hours up to 2.73 hours. As horizontal power increased from .40 up to .80 time commitment increased from 1.31 to 2.08 hours. In general, as vertical and horizontal power increased, the subjects were more willing to commit themselves to further work on the task.

Insert Table 2 about here

Interpretation of the results for horizontal power was complicated by the presence of curvilinear relationships in the responses to the time commitment measure. In a one-way analysis of variance, the quadratic term was significant for time commitment, $F(1,147) = 4.90$, $p < .03$. The means for this measure were 2.08, 1.92, 1.31 and 2.19 for the .80, .60, .40 and .20 power weights. As the groups' power decreased from a weight of .80 and .60 to .40, the was a corresponding decrease in the measure of commitment. However, at the lowest level of horizontal power, a weight of .20, commitment was relatively high.

The prediction of a positive effect on ego-involvement was not supported in terms of the vertical power distribution. Partial support was provided, however, in the effect of the horizontal power distribution on participants involvement, $F(3,126) = 3.04$, $p < .03$. In a one-way analysis of variance, horizontal power also had a significant curvilinear effect on ego-involvement, $F(1,147) = 4.65$, $p < .03$. The curvilinear effect can be seen in the means which, on a seven-point scale, were 5.10, 4.58, 4.00, and 4.58 for the .80, .60, .40 and .20 horizontal power conditions. As in the case of effects on behavioral commitment, as the groups' power decreased from .80 to .40, there was a corresponding decrease in ego-involvement, but at the lowest group

TABLE 2

Two-way Analysis of Variance of Effects of Power Distribution on Behavioral Commitment and Ego-Involvement

Source	df	ms	F	% Var.
Time Commitment				
Vertical Power (A)	5	4.15	2.08*	3.33
Horizontal Power (B)	3	4.99	2.51*	2.78
A x B	15	1.99	1.00	.00
Error	127	1.99		
Product Set Commitment				
Vertical Power (A)	5	4.35	1.21	.69
Horizontal Power (B)	3	6.06	1.69	1.34
A x B	15	3.17	.88	.00
Error	127	3.59		
Ego-Involvement				
Vertical Power (A)	5	2.58	1.10	.31
Horizontal Power (B)	3	7.10	3.04**	3.71
A x B	15	3.46	1.48	4.36
Error	126	2.34		

* $p < .10$

** $p < .05$

weight (.20) involvement was slightly higher. In general, however, greater involvement was reported by people in the groups with high horizontal power.

In summary, where significant results occurred they suggest that increases in both vertical and horizontal power increased motivation in terms of time commitment and that increases in horizontal power increased ego-involvement. The significant interactions suggested that for some reason the lowest horizontal power condition (with a weight of .20) also caused high levels of motivation. We will discuss this point more fully at the end of the paper.

Attitudes--There were two sets of attitude measures: perceived influence and satisfaction with one's influence. Both sets of measures assessed influence and satisfaction with (1) one's power in the subgroup, (2) the subgroup's power in the team and (3) one's overall power. We suspected that vertical power should be related to one's feelings of influence and satisfaction with their power within the subgroup while horizontal power should be related to one's feelings of influence and satisfaction with the subgroup's power. Both power dimensions should be related to the feelings of influence and satisfaction with one's overall power.

Table 3 shows that the amount of vertical power did have a significant effect on the measure of perceived individual influence as predicted, $F(5,127) = 10.4$, $p < .001$. The effect of the horizontal power distribution on subjects' reports of their subgroup's influence was also significant, $F(3,127) = 28.64$, $p < .001$. In both cases, as vertical or horizontal power increased, subjects reported increases in their personal or subgroup influence. As vertical power increased from .10 to .80 perceived individual influence increased from 2.70 to 4.73. As horizontal power increased from .20 to .80 perceived subgroup influence increased from 2.53 to 5.03. There was no

trace of the quadratic effects found for the motivation measures. In terms of individuals' perceptions of their own overall influence on the team's decisions, vertical power had a significant effect $F(5,127) = 11.73$, $p < .001$, as did horizontal power, $F(3,127) = 6.71$, $p < .001$. Again, increases in power produced increases in perceived overall influence.

Insert Table 3 about here

These data tended to confirm most of our expectations. We would predict that since vertical power relates to within-group power it should have a main effect on one's perceived influence within their subgroup. This prediction was confirmed. On the other hand, since horizontal power relates to across group power it should have an effect on one's perceived influence of the subgroup. This prediction was also confirmed. Finally, both vertical and horizontal power should have an effect on one's perceived overall influence. These analyses were significant in the predicted direction.

Support was also found for the hypothesis that satisfaction with influence would increase with increases in the two power variables. It will be recalled that there were three measures of satisfaction with one's influence that were similar in structure to the influence measures. Responses on these measures were predicted to be positively related to the vertical and horizontal distributions of power. Table 4 presents these data.

Insert Table 4 about here

TABLE 3

Two-Way Analysis of Variance of the Effects of Vertical and Horizontal Power on Perceptions of Individual, Subgroup and Overall Influence

Source	df	ms	F	% Var.
Perceived Individual Influence				
Vertical Power (A)	5	21.18	10.41*	23.21
Horizontal Power (B)	3	.63	.31	.00
A x B	15	2.99	1.47	3.50
Error	127	2.03		
Perceived Influence of Subgroup on Team				
Vertical Power (A)	5	1.41	.86	.00
Horizontal Power (B)	3	47.17	28.64*	34.84
A x B	15	2.32	1.41	2.59
Error	127	1.65		
Perceived Overall Influence on Team				
Vertical Power (A)	5	19.79	11.73*	23.23
Horizontal Power (B)	3	11.33	6.71*	7.42
A x B	15	2.06	1.22	1.42
Error	127	1.69		

*$p < .001$

TABLE 4

Two-Way Analysis of Variance of Satisfaction with Individual, Subgroup and Overall Influence

Source	df	ms	F	% Var.
Satisfaction with Individual Influence in Group				
Vertical Power (A)	5	7.85	3.60**	7.44
Horizontal Power (B)	3	7.04	3.23*	3.82
A x B	15	2.82	1.29	2.52
Error	126	2.18		
Satisfaction with Subgroup's Influence on Team				
Vertical Power (A)	5	1.41	.87	.00
Horizontal Power (B)	3	43.52	26.82***	34.23
A x B	15	1.49	.92	.00
Error	126	1.62		
Satisfaction with Overall Influence on Team				
Vertical Power (A)	5	4.42	2.57*	4.01
Horizontal Power (B)	3	21.52	12.53***	17.65
A x B	15	1.84	1.07	.54
Error	126	1.72		

*$p < .05$

**$p < .01$

***$p < .001$

A significant relationship was found for the effect of vertical power on the measure of satisfaction with individual influence within one's subgroup, $F(5,126) = 3.60$, $p < .005$. This result was as predicted. As participants' within-group weight increased, so did their satisfaction with their influence in the subgroup. On a scale from one to seven, with seven indicating very high satisfaction with influence, the mean in the .10 vertical power condition was 3.45 and in the .80 power condition it was 4.53. One can see from Table 4 that horizontal power also had a significant effect on one's satisfaction with their influence within the subgroup. Theoretically, this finding makes little sense. As the horizontal weight increased so did the subjects' satisfaction with their within group influence.

In the case of the satisfaction with the subgroup's influence, there was a significant effect of horizontal power as expected, $F(3,126) = 26.82$, $p < .001$. Satisfaction with the subgroup's influence increased from a mean of 2.56 in the lowest horizontal power condition to 4.97 in the highest power condition. Thus, as the power of their marketing subgroup increased, the subjects felt more satisfied with their subgroup's power.

When the two power dimensions were related to satisfaction with overall influence, both horizontal power and vertical power were found to have a significant effect. Overall influence was measured in terms of subjects' perceptions of their overall impact on the final decisions of their combined marketing-engineering team. As horizontal power increased, satisfaction with overall influence also increased. The mean satisfaction increased from 3.06 (power = .20) to 4.77 (power = .80). As vertical power increased so did satisfaction. The means for the six conditions were 3.28, 3.53, 3.72, 4.06, 4.50 and 4.47.

In summary, the attitudinal data suggest strongly that horizontal power had an effect on one's perception of influence and satisfaction with the influence of one's subgroup. The more power the subgroup had the higher the perceived influence and satisfaction with the subgroup's influence. This effect also occurred for overall influence. High horizontal power resulted in higher perceived overall influence and satisfaction with that influence than low horizontal power. These results are as predicted.

The effects of vertical power differences were similar. High vertical power resulted in higher perceptions of individual and overall influence. The greater the vertical power the greater the feelings of influence and satisfaction with influence within the subgroup and overall. These findings were also as predicted.

Effects of Increases in Joint Power Weights

The effect of one's overall power was analyzed in terms of the joint power weight which was defined as the product of the vertical and horizontal power weights. It was predicted that as joint power increased, subjects would respond more positively on each of the dependent variables. That is, they would be more committed to the task, more ego-involved, perceive they have more <u>overall</u> influence and be more satisfied with their <u>overall</u> influence.

A one-way analysis of the effects of the joint power weights on these dependent variables provides partial support for the hypotheses (see Table 5). For these analyses there were only 12 different weights since in some cases the leader and member joint weights were the same. The joint power weights did not have a significant effect on either behavioral measure of

motivation. Both time commitment and product set commitment were not significant. Effects on the other measure of motivation, ego-involvement, also were not significant.

Insert Table 5 about here

The attitudinal measures provide strong support for the hypotheses. Both perceptions of overall influence and satisfaction with overall influence were significantly higher when the joint power weight was high rather than low. For example, as shown in Table 6, the subjects perceived overall influence ranged from 2.13 (when the joint weight was .02) up to 5.00 (when the joint weight was .64). Subjects' satisfaction with their overall influence also increased with increases in joint power.

Insert Table 6 about here

In summary, the joint power weight did not have an impact on the motivational measures. On the other hand, both of the attitudinal measures showed significant increases with increases in joint power.

Reactions to Equivalent Joint Power Weights

The conditions with equal joint power weights are shown in Table 7. The first condition listed in each pair involved higher vertical power relative to the second condition and the second condition always involved higher horizontal power. (For example, leaders in both condition 2 and condition 5 had equal joint weights of .48. Condition 2 involved higher vertical power, but lower horizontal power than condition 5.) There were four equivalent pairs for members and four equivalent pairs for leaders.

TABLE 5

One-Way Analysis of Variance of Effects of Joint Power on Motivation and Attitudes

Source	df	ms	F	% Var.
Time Commitment				
Joint Power	11	2.66	1.27	1.91
Error	139	2.10		
Product Set Commitment				
Joint Power	11	1.67	.44	.00
Error	139	3.80		
Personal Importance of Doing Well on Product Ratings				
Joint Power	11	2.65	1.04	.30
Error	139	2.55		
Perception of Overall Influence				
Joint Power	11	12.10	6.60*	28.97
Error	139	1.83		
Satisfaction with Overall Influence on Team				
Joint Power	11	7.63	4.20*	18.99
Error	138	1.82		

*$p < .001$

TABLE 6

Mean Perception of Overall Influence for

Different Levels of Joint Power Weights

Joint Power	.64	.48	.36	.32	.24	.18	.16	.12	.08	.06	.04	.02
Overall Influence	5.00	5.67	4.75	4.00	3.50	2.86	3.04	2.46	2.75	1.84	2.40	2.13

Insert Table 7 about here

It was predicted that, when each pair of equivalent conditions was compared, subjects' responses on the measures of the dependent variables would be more positive in the conditions with higher vertical power. This prediction was based partly on intuition and partly on previous research. We felt that if overall power was equal that people would probably prefer to work in a setting where they could personally exercise that power than in a setting where their group had power vis-a-vis some other group. Some recent research by Ronan (1974) has also suggested that where payoffs are equal people will prefer a setting where they believe they can exercise their personal influence.

Since we were dealing with joint power, the five corresponding measures of the dependent variables were time commitment, product set commitment, ego-involvement, perceived overall influence and satisfaction with overall influence. Given five measures and four matched conditions, the predictions of more positive responses to higher vertical power could be tested in twenty comparisons for members and for leaders (see Table 8).

Insert Table 8 about here

Several significant differences were found when responses in the equivalent joint power conditions were compared. Significant differences were found in four of the twenty comparisons for members (in each case $p < .05$). Two of the differences for leaders were significant ($p < .05$) and a third difference approached significance ($p < .10$). Overall, more significant differences resulted than would be expected by chance. Therefore,

TABLE 7

Conditions Resulting in Equal Joint Weights

Condition	Vertical Power Weight	Horizontal Power Weight	Joint Power Weight
Leaders			
2	.80	.60	.48
5	.60	.80	.48
3	.80	.40	.32
9	.40	.80	.32
7	.60	.40	.24
10	.40	.60	.24
4	.80	.20	.16
11	.40	.40	.16
Members			
15	.30	.40	.12
18	.20	.60	.12
19	.20	.40	.08
21	.10	.80	.08
16	.30	.20	.06
22	.10	.60	.06
20	.20	.20	.04
23	.10	.40	.04

TABLE 8

T-Tests of Reactions to Dependent Variables when Joint Power Weights Were Equivalent

Conditions	Dependent Variables				
	Time Commitment	Product Set Commitment	Ego-Involvement	Overall Influence	Satisfaction with Overall Influence
Leaders					
2 & 5	n.s.	n.s.	n.s.	n.s.	n.s.
3 & 9	n.s.	$t(5) = 3.78$ $p < .013$	n.s.	n.s.	$t(5) = 2.07$ $p < .10$
7 & 10	n.s.	n.s.	n.s.	n.s.	n.s.
4 & 11	n.s.	n.s.	n.s.	$t(6) = 2.71$ $p < .05$	n.s.
Members					
15 & 18	n.s.	n.s.	n.s.	n.s.	n.s.
19 & 21	n.s.	n.s.	n.s.	$t(17) = 1.80$ $p < .05$	$t(16) = 2.21$ $p < .05$
16 & 22	$t(17) = 3.11$ $p < .01$	n.s.	n.s.	n.s.	n.s.
20 & 23	n.s.	n.s.	$t(18) = 2.92$ $p < .01$	n.s.	n.s.

additional analyses were carried out to discover which power dimension seemed to have the greatest impact.

The hypothesis of a more positive response in the condition of higher vertical power was supported on two of the comparisons for members and in one comparison for leaders. As shown in Table 8, a significantly higher response was found for members in terms of time commitment, $\underline{t}(17) = 3.11$, $p < .01$, and ego-involvement, $\underline{t}(18) = 2.92$, $p < .01$, and for leaders on product set commitment, $\underline{t}(5) = 3.78$, $p < .02$. In these three tests the more positive responses occurred in the conditions in which the subjects' vertical power was higher. Note also, that these measures are all motivational measures.

A different response pattern was found when measures of attitudes were involved. Perceived overall influence was significantly higher in one condition for members, $\underline{t}(17) = 1.80$, $p < .05$ and in one condition for leaders, $\underline{t}(6) = 2.71$, $p < .05$. Satisfaction with overall influence was significantly higher in one condition for members, $\underline{t}(16) = 2.21$, $p < .05$, and approached significance in one condition for leaders, $\underline{t}(5) = 2.07$, $p < .10$. In three of the four comparisons, the more positive responses on the satisfaction measures were found in the condition with higher horizontal power. These reactions are just the opposite of what was hypothesized.

In summary, when joint power weights were equivalent, the subjects' responses to the dependent variables were generally equivalent, but more significant differences occurred than would be expected by chance. As predicted, higher vertical power was associated with more positive reactions in terms of behavioral commitment and ego-involvement. Contrary to our predictions, more positive responses to perceived overall influence and satisfaction with overall influence were found in the conditions with higher

horizontal power. Thus, vertical power seems to have a greater impact on motivation while horizontal power had a more substantial impact on attitudes.

DISCUSSION

The primary purpose of this research was to investigate the effects of different types of power on an individual's motivation and attitudes about the task. In this last section we plan to (1) review and summarize the results, (2) analyze more fully some of the anomolous findings, and (3) discuss some implications of the results for theory and practice.

Review of Results

One first question that one might ask is whether people are in fact sensitive to the total amount of power they have in a decision making situation. Our analyses on the effects of the joint power weight addresses this issue directly. As can be seen in Table 9, the joint power weight clearly had an effect on subjects' attitudes. Both perceived overall influence and satisfaction with overall influence were in the predicted direction. The joint power weights did not have an effect on the motivational measures. Thus, people seem to be sensitive to these overall differences in power but the effect is on attitudes rather than motivation.

Insert Table 9 about here

A second question has to do with what happens when this overall power is broken down into its component parts. The issue here is the effects of vertical and horizontal power on motivation and attitudes. Table 10 presents a summary of the findings.

TABLE 9

Summary of Reactions to Joint Power Weights

	Dependent Variable	
Motivation	Time Commitment	-
	Product Set Commitment	-
	Ego-Involvement	-
Attitudes	Perceived Overall Influence	F = 6.60*
	Satisfaction with Overall Influence	F = 4.20*

*p < .001

Insert Table 10 about here

The obvious conclusion is that both horizontal power and vertical power have a substantial impact on the dependent variables. Eleven out of fourteen of the tests were significant, five for vertical power and six for horizontal power. These results strongly suggest that both power dimensions are important for understanding peoples' reactions to participation in the decision process.

A third question has to do with the relative importance of horizontal and vertical power when the overall power is equal. Do people prefer to be a big fish in a small pond or a small fish in a big pond. Table 11 summarizes these data.

Insert Table 11 about here

These results seem to suggest that where overall power is equal vertical power has a greater impact on motivation than horizontal power. Three of the four cases where differences occurred support this contention. On the other hand, the horizontal weight seemed to have a greater impact on attitudes than the vertical weight. All three occasions where the horizontal weight was more important fall in the attitude category. These data seem to support our earlier hypotheses: Vertical power, when it has an effect, seems to be important for motivation; horizontal power, when it has an effect seems to be important for attitudes.

TABLE 10

Summary of Reactions to Differences in Power

Independent Variable		Dependent Variable	
Vertical Power	Motivation	Time Commitment	F = 2.08*
		Product Set Commitment	-
		Ego-Involvement	-
	Attitudes	Perceived Influence in Subgroup	F = 10.41****
		Perceived Overall Influence	F = 11.73****
		Satisfaction with Influence in Subgroup	F = 3.60***
		Satisfaction with Overall Influence	F = 2.57**
Horizontal Power	Motivation	Time Commitment	F = 2.51*
		Product Set Commitment	-
		Ego-Involvement	F = 3.04**
	Attitudes	Perceived Influence of Subgroup	F = 28.64****
		Perceived Overall Influence	F = 6.71****
		Satisfaction with Group Influence	F = 26.82****
		Satisfaction with Overall Influence	F = 12.53****

*p < .10 ***p < .01

**p < .05 ****p < .001

TABLE 11

Reactions to Vertical and Horizontal Power when the Joint Power Weights Were Equivalent

Independent Variable		Dependent Variable	Leaders	Members
Vertical Power More Important	Motivation	Time Commitment	-	*
		Product Commitment	*	-
		Ego-Involvement	-	*
	Attitudes	Perceived Overall Influence	*	-
		Satisfaction with Overall Influence	-	-
Horizontal Power More Important	Motivation	Time Commitment	-	-
		Product Commitment	-	-
		Ego-Involvement	-	-
	Attitudes	Perceived Overall Influence	-	*
		Satisfaction with Overall Influence	*	*

A * represents a situation where one of the comparisons of two conditions with equal power weights showed significant differences.

Analysis of Anomolous Findings

The only confusing finding concerns the quadratic effects reported in the early parts of the results section. You will recall that on a number of variables peoples' motivation or involvement were high in the .80 horizontal power condition, decreased in the .60 and .40 conditions and then increased again in the .20 condition. For some reason, people responded favorably to this low horizontal power condition.

Our post hoc explanations of these findings are purely speculative. It occurred to us that in this condition the potential rewards if this team won the $50 prize were low for both leaders (i.e., from $8 to $4) and members (i.e., from $3 to $1). A cognitive dissonance interpretation would suggest that people might be thinking the following: "Why am I doing this task? There's no money in it for me. It must be that I find the task interesting and stimulating." A similar type of prediction might be made based on the recent work of Deci and others (Deci, 1975) suggesting that in some cases people will work harder and be more satisfied when extrinsic rewards such as money are less salient outcomes of the work setting than intrinsic rewards of doing the task. In any case these results were intriguing and suggest some areas for further research.

Implications for Theory and Practice

We've already mentioned the point that horizontal power is frequently omitted from most theories of power relationships in organizations and from the discussions about participation in decision making. We won't belabor the point. It is sufficient to say that horizontal power should probably be included in such theories in the future if we wish to understand the effects of power and participation on individual behavior.

The major implication for practice revolves around the topic of "participative democracy" and how it is typically applied. It is our impression that the major emphasis in these movements is to equalize power within a subgroup; to give more power to subordinates relative to their supervisors. What our results suggest is that it may be equally important to analyze the power distribution across groups. Where inappropriate power seems to reside in a few departments or units it may be just as crucial to redistribute power at this level than at the subgroup level. In this manner both horizontal and vertical power can be distributed in a manner that may make sense from a technical or efficiency point of view and also produce positive attitudes and increased motivation in the work force.

FOOTNOTES

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REFERENCES

Beer, M. "The Technology of Organization Development." In M.D. Dunnette (Ed.), Handbook of Industrial and Organizational Psychology (Chicago: Rand-McNally, 1976).

Coch, L., & French, J. R. P., Jr. "Overcoming Resistence to Change," Human Relations, 1. (1948), 512-532.

Cyert, R. M., & March, J. G. A Behavioral Theory of the Firm (Englewood Cliffs, N.J.: Prentice-Hall, 1963).

Dalton, M. Men Who Manage (New York: John Wiley, 1959).

Deci, E. L. Intrinsic Motivation (New York: Plenum Press, 1975).

Hinings, C. A., Hickson, D. J., Pennings, J. M., & Schneck, R. E. "Structural Condition of Intra-Organizational Power," Administrative Science Quarterly, 19. (1974), 22-44.

Landsberger, H. A. "The Horizontal Dimension in Bureaucracy," Administrative Science Quarterly, 6. (1961), 299-332.

Latham, G. P., & Yukl, G. A. "Assigned Versus Participative Goal Setting with Educated and Uneducated Wood Workers," Journal of Applied Psychology, 60. (1975), 299-302.

Lowin, A. "Participative Decision Making: A Model, Literature Critique, and Prescription for Research," Organizational Behavior and Human Performance, 3. (1968), 68-106.

Mitchell, T. R. "Motivation and Participation: An Integration," Academy of Management Journal, 16. (1973), 670-679.

O'Meara, J. T., Jr. "Selecting Profitable Products," Harvard Business Review, 39. (1961), 83-89.

Ronen, J. "Involvement in Tasks and Choice Behavior," Organizational Behavior and Human Performance, 11. (1974), 28-43.

Salancik, G. R., & Pfeffer, J. "The Bases and Use of Power in Organizational Decision Making: The Case of a University," Administrative Science Quarterly, 19. (1974), 453-473.

Scott, W. G., Mitchell, T. R., & Peery, N. S. "Organizational Governance." In W. Starbuck (Ed.), Handbook of Organizational Design (New York: Elsevier Scientific Publishing Co., In press).

Strauss, G. "Workflow Frictions, Interfunctional Rivalry, and Professionalism: A Case Study of Purchasing Agents," Human Organization, 23. (1964), 137-150.

Thompson, J. D. Organizations in Action (New York: McGraw-Hill, 1967).

Vroom, V. H. Some Personality Determinants of the Effects of Participation (Englewood Cliffs, N.J.: Prentice-Hall, 1960).

Vroom, V. H. Work and Motivation (New York: Wiley, 1964).

Vroom, V. H. "Industrial Social Psychology." In G. Lindzey and E. Aronson (Eds.), Handbook of Social Psychology (Vol. 5) (Reading, Mass.: Addison-Wesley, 1970).

Vroom, V. H., & Yetton, P. W. Leadership and Decision Making (Pittsburgh: University of Pittsburgh Press, 1973).

Wexley, K. N., Singh, J. P., & Yukl, G. A. "Subordinate Personality as a Moderator of the Effects of Participation in Three Types of Appraisal Interviews," Journal of Applied Psychology, 58. (1973), 54-59.

Wood, M. T. "Power Relationships and Group Decision Making in Organizations," Psychological Bulletin, 79. (1973), 280-293.